Cocoas," the natural history, the various modes of preparation, the chemical composition, the physiological action, and the dietetic uses being in each case satisfactorily and pretty fully discussed.

"The Sweets we Extract" have several chapters devoted to them, in which the chemistry of the sugars is treated of, and the various methods of preparing cane, maple, beet-root, and even manna and milk-sugar are fully described.

"The Liquors we Ferment" include "The Beers," "The Wines," and "The Brandies." Under each head we find an amount of general information relating to modes of manufacture, to chemical composition, and to habits of various nations, which is truly remarkable.

"The Narcotics we Indulge in" have eight chapters devoted to them, the subjects treated of being the following:—tobacco; the hop and its substitutes; the poppy and the lettuce; Indian hemp; the betel nut and the pepperworts; coca; the Siberian fungus, and the minor narcotics. Then follow "The Odours we Enjoy," "The Smells we Dislike," and "The Colours we Admire." The last-named chapter is entirely new, and we shall therefore notice it at somewhat greater length than its predecessors.

It appears to us rather a mistake to have classed the blood colouring matter under the heading of "The Colours we Admire;" beautiful though the colour of blood may appear to be to the physiologist, we doubt very much whether most persons would not object to the statement implied in the classification adopted. As the proximate principle which confers upon the coloured blood corpuscles their remarkable function as the oxygen-carriers of the body, it ought in our opinion to have been relegated to the chapter which treats of "What we Breathe and Breathe for." In connection with hæmoglobin, though not in the chapter now under discussion, we find one of the really few inaccurate statements with which we have to charge Mr. Church. "But if the carbon-containing substances derived from man's food are burnt throughout his body, and if this burning takes place because of oxygen brought from the lungs, how and in what forms, may we ask, are the products of this burning, being no longer of use, conveyed out of the body? The very hæmaglobin which has brought the oxygen carries away the chief product of the burning—namely, carbonic acid gas." This is not correct.

Hæmoglobin possesses no special power of absorbing carbon dioxide, and the greater part of this body as it is formed, is taken up by the liquor sanguinis in which it is held partly in a state of solution and partly of feeble chemical combination. We observe that Prof. Church applies to the blood colouring matter the term hæm*a*globin instead of hæm*o*globin. The second is the now universally adopted way of spelling the word; it is a barbarously coined word and can only be preferred to the etymologically more correct hæmato-globulin on the score of use and wont; the change made by Mr. Church is, however, surely no improvement, as it is the stem (*αἱματ-*) and not the nominative case (*αἷμα*) which should be incorporated in the compound word. In the words "hæmorrhage," "hæmorrhoidal," "hæmoptysis," we have at least the sanction of old usage given to the coiners of "hæmoglobin."

After shortly describing hæmoglobin Mr. Church refers to Turacin, a very remarkable red colouring matter containing 8 per cent. of copper, which he discovered several years ago in the pinion feathers of the *Plantain-eaters*. "The existence of an animal pigment so rich in copper as turacin, offers many interesting problems for study. Traces of this metal seem generally diffused in most vegetables and many animals; but here are more than traces—weighable and visible quantities." The sheets of the book had probably passed through the press before the announcement of Dr. Frederique's recent discoveries had been made in reference to the blood of the octopus, which would otherwise have probably been noticed. Dr. Frederique, of Ghent, in the first place confirmed the observations made by previous writers as to the colour of the blood of the octopus; in this creature the arterial blood is blue, whilst the venous blood is colourless. On agitating the venous blood with oxygen or atmospheric air it becomes blue; conversely on treating the blue arterial blood with reducing agents or heating it in the vacuum of a mercurial pump it loses its blue colour. The colour is found by Frederique to be due to a complex body containing copper, to which he has given the name hæmocyanin, which appears to have an analogous constitution to hæmoglobin; like this body it is decomposed easily and yields a proteid body and a colouring matter which contains all the copper of the original substance. This copper containing proximate principle is dissolved in the plasma and is undoubtedly the oxygen carrier of the blood of the octopus.

The chapter on "The Colours we Admire" closes with a succinct account of the synthesis (by Graebe and Liebermann) of alizarin, the madder pigment, and by a notice of recent researches on the constitution of certain of the coal-tar colours.

Did space permit we should notice the concluding chapters, of which some are mainly devoted to certain physiological topics, others to a recapitulation on "The Circulation of Matter." We trust, however, that the sketch which we have given will suffice to give some idea of the wide scope and deep interest which attaches to Mr. Church's admirable edition of "The Chemistry of Common Life." A. G.

SILURIAN FOSSILS

A Monograph of the Silurian Fossils of the Girvan District in Ayrshire, with Special Reference to those contained in the "Gray Collection." By H. Alleyne Nicholson, M.D., D.Sc., F.R.S.E., Professor of Natural History in the University of St. Andrews, and Robert Etheridge, Jun., F.G.S., Acting-Palæontologist to the Geological Survey of Scotland. Fasciculus I. *Rhizopoda, Actinozoa, Trilobita.* Pp. 135, Pl. i.-ix. (Blackwood and Co., 1878.)

THE authors of this monograph state in their preface that they have been enabled to undertake their task through the aid rendered to them by a grant from the Government fund administered by the Royal Society, and we cannot but feel in examining this first instalment of the result of their labour that the pecuniary assistance has been in this case exceedingly well bestowed.

The Silurian district of Girvan in Ayrshire is one that has attracted much attention from geologists, and considerable difference of opinion has existed as to the exact correlation of the several members of the formation as there exhibited with the equivalent English deposits. The fossils, though numerous, are often in a rather unsatisfactory condition as regards preservation, and it was most desirable that a careful study of all the known forms should be made by competent palæontologists. The richly stocked cabinets of Mrs. Robert Gray have furnished the larger part of the specimens described, and the completion of this first part of the work was rendered possible by the liberality of Mr. Gray.

The memoir commences with an account of the bibliography of the subject, which appears to be very full and complete, and then proceeds to the description of the lower forms of life. Any one who will take the trouble to compare the lists given by our authors with those previously published cannot but be struck by the large additions which are now made to the Girvan Silurian fauna. A single doubtful fucoid and four species of *Foraminifera* are described as occurring in the Girvan rocks, and among the latter is the remarkable *Saccammina carteri*, which is so excessively abundant in some of the Carboniferous limestones. This form has been recognised as identical with the Carboniferous type by Mr. H. B. Brady himself, and its existence in Silurian strata adds another example—one of great interest to geologists—of the wide range in time of some of the lower forms of life.

Among the corals from the Girvan area Messrs. Nicholson and Etheridge enumerate no less than twenty-two forms, some being old and well-known species, but the majority are new to science; indeed several new genera of Actinozoa are established in the present work. The specimens are usually in a bad state of preservation, a difficulty which has been to some extent overcome by the authors by the employment of thin sections. The fact which comes out most strikingly from the study of the Cœlenterate fauna of the Girvan beds is that the nearest analogues of the Silurian fossils of Scotland are to be found not in the English area but in the American. The same fact, it will be remembered, was made very strikingly manifest from Mr. Salter's studies of the fauna of the Silurian limestone of Durness in Sutherland.

Of Trilobites twenty-eight species are now described as occurring in the Girvan district, and among them several forms new to science have been detected.

As the present volume only contains the first part of the results of our author's labours we do not find a full discussion of the bearing of the palæontological evidence on the interesting question of the age of the several Girvan deposits. There can be no doubt, however, that both the Upper and Lower Silurian are there represented, though the exact correlation of the different members of the series can only be successfully attempted when the fossils have been more fully worked out.

The present fasciculus is illustrated by nine very well executed lithographic plates from the pencil of Mr. Charles Berjean. We congratulate the authors on the able manner in which they have executed this first portion of their task, and hope soon to have to record the appearance of other portions of this important monograph.

OUR BOOK SHELF

Natural History Rambles. The Sea-Shore. By Prof. P. M. Duncan, F.R.S. *Lane and Field.* By the Rev. J. G. Wood. *Underground.* By J. E. Taylor, F.L.S. *The Woodlands.* By M. C. Cooke, LL.D. (London: S.P.C.K., 1879).

THESE four handy little volumes are well put together, and seem to us decidedly superior to works of a similar kind with which we used to be familiar in our youth. The evident purpose of the volumes is not to teach their subjects systematically, but to lead those into whose hands they may fall to take an interest in the common objects of nature which may be met with in an occasional walk. For this purpose they seem to us well adapted, and the information they convey on the whole trustworthy. They abound in suitable and well-executed illustrations, and might appropriately be put into the hands of any one, old and young, whose circumstances would give him a chance of using them.

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*

[*The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.*]

Brorsen's Comet

LAST night, May 3, I observed Brorsen's comet pass nearly centrally over the star DM, + 61°, No. 873. In the principal focus of the telescope were two straight bars, 43″ (seconds of arc) wide intersecting in the centre of the field. The bars are at right angles to one another, and were inclined 45° to the hour circle. With this arrangement it was easy, by moving the telescope gently about the polar axis (which is well adjusted), to determine the conjunctions in R.A. and in declination, while angles of position coinciding with the bars, and distances in parts of the breadth of a bar, could be estimated with considerable accuracy. In this manner I made the following observations of the position of the comet with reference to the star :—

Chronometer time. h. m. s.	Angle of position. °	Dist. ″	
10 2 59 ...	260 ...	33	Distance measured by beats of chronometer.
10 4 31 ...	270 ...	12	Ditto.
10 6 20 ...	— ...	—	Star apparently central in comet.
10 7 30 ...	320 ...	10	Star a little right of centre.
10 11 30 ...	0 ...	—	Estimated conjunction in R.A.
10 16 0 ...	45 ...	16	
10 18 15 ...	45 ...	43	
10 20 30 ...	45 ...	65	

Projecting these observations on a chart of ruled squares, it appears that at 10h. 11m. 36s. (corresponding to 10h. 11m. 14s. G.M.T.) the comet followed the star 0·68s. in R.A. and was 12″ N. of it, while the nearest approach of the centre of the comet to the star was 7″ at about 10h. 7m.

The moon was shining with great brilliancy (being nearly full) and made the comet faint, reducing its apparent diameter to 1½ or 2 minutes. The star is given in the DM as of the 8·8 magnitude, but I think is underrated a little. While the comet was passing over it there was no sensible diminution of its lustre. The DM position of the star for 1855·0 is—

$$\alpha = 6\text{h. } 7\text{m. } 25\text{s.}, \quad \delta = +61^\circ\ 28'{\cdot}9.$$

The light of the comet has diminished rapidly since April 4. It is now less bright than a 9th mag. star.

Blackheath G. L. TUPMAN

IT is to be hoped that while the comet remains with us the observations of Prof. Young (NATURE, vol. xix. p. 559), and of Mr. Christie (NATURE, vol. xx. p. 5) may be repeated and confirmed by those who possess telescopes of sufficient power.